

Claims:

- 1 1. A method of detecting Parkinson's disease (PD) through MRI of substantial nigra
2 pars compacts (SNc) tissue comprising:
3 obtaining a gray matter suppressed (GMS) MRI signal of said SNc tissue;
4 obtaining a white matter suppressed (WMS) MRI signals of said SNc tissue;
5 combining information from said GMS and WMS MRI signals to produce a
6 resultant signals indicative of PD.
- 1 2. A method as in claim 1 in which said obtaining of each of the GMS and WMS
2 MRI signals comprises using an inversion recovery (IR) pulse sequence.
- 1 3. A method as in claim 2 including forming GMS and WMS MRI images using
2 information from said GMS and WMS MRI signals, respectively, and wherein
3 said combining step comprises combining at least portions of said GMS and
4 WMS images.
- 1 4. A method as in claim 3 in which said combining comprises obtaining a ratio
2 image of GMS and WMS images for at least one MRI slice.
- 1 5. A method as in claim 4 further comprising processing selected medial and lateral
2 regions of interest in each ratio image to derive a numerical measure indicate of
3 the presence and/or staging of PD.
- 1 6. A method as in claim 1 further including using the resultant signals to stage PD.
- 1 7. A method as in claim 1 including plotting the resultant signals in a two-
2 dimensional plot in which markers for patients with PD appear in an area
3 different from that for patient without PD

- 4 8. A method as in claim 7 in which the markers for patient with PD appear in
5 different areas corresponding to different stages of PD.

1 9. A method as in claim 1 in which said resultant signals are indicative of a relative
2 loss of MRI signal from lateral as compared with medial portions of the SNC.

1 10. A method of detecting Progressive Supranuclear Palsy (PSP) through MRI of
2 substantial nigra pars compacts (SNC) tissue comprising:
3 obtaining a gray matter suppressed (GMS) MRI signal of said SNC tissue;
4 obtaining a white matter suppressed (WMS) MRI signals of said SNC tissue;
5 combining information from said GMS and WMS MRI signals to produce a
6 resultant signals indicative of PSP.

1 11. A method as in claim 10 in which said resultant signals are indicative of a relative
2 loss of MRI signal from medial as compared with lateral portions of the SNC.

1 12. A method of distinguishing between two forms of parkinsonism radiographically,
2 Parkinson's disease (PD) and Progressive Supranuclear Palsy (PSP) through
3 MRI of substantial nigra pars compacts (SNC) tissue comprising:
4 obtaining at least two starting MRI images of SNC tissue using different MRI
5 parameters;
6 combining the starting images to compute resultant signals differentiating
7 between PD and PSP.

1 13. A method as in claim 12 in which the at least two starting images comprise a
2 gray matter suppressed (GMS) MRI image and a white matter suppressed
3 (WMS) MRI image of said SNC tissue in the same MRI slice.

- 1 14. A method as in claim 13 in which each of said GMS and WMS image is obtained
2 using an inversion-recovery MRI pulse sequence.
- 1 15. A method of detecting at least one of Parkinson's disease (PD) and Progressive
2 Supranuclear Palsy (PSP) through MRI of substantial nigra pars compacts (SNC)
3 tissue comprising:
4 obtaining at least two starting MRI images of SNC tissue using different MRI
5 parameters;
6 combining the starting images to compute resultant signals indicative of and
7 identifying at least one of PD and PSP.
- 1 16. A method as in claim 12 in which the at least two starting images comprise a
gray matter suppressed (GMS) MRI image and a white matter suppressed
(WMS) MRI image of said SNC tissue in the same MRI slice.
- 1 17. A method as in claim 13 in which each of said GMS and WMS image is obtained
using an inversion-recovery MRI pulse sequence.